Retroactively estimating system clock skew from stored web browser cookies

Contents

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$\rightarrow$ *What was the skew of the PC's clock with respect to the clock of the security camera? Or: what were their respective skews with respect to some universal clock?*

Skewed up clocks

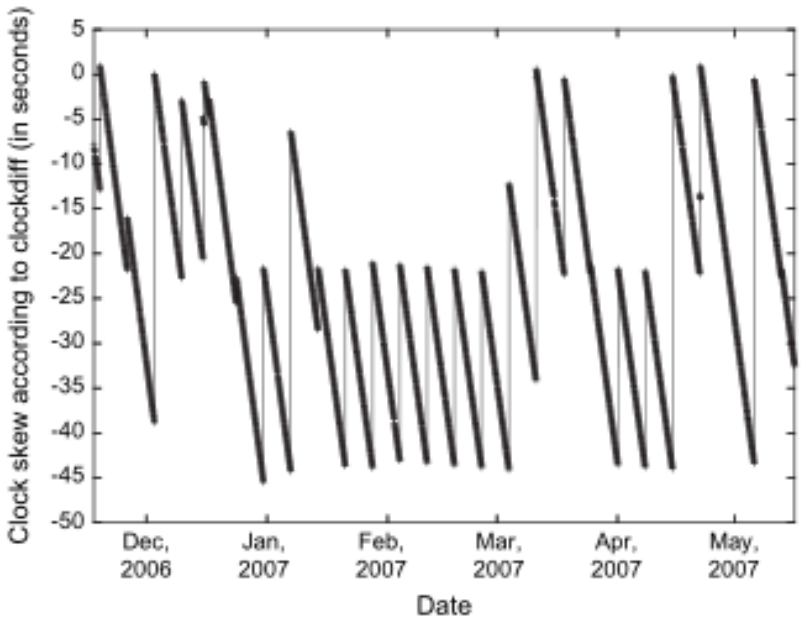


Fig. 17 – A clock with periodic jumps (sampled hourly).

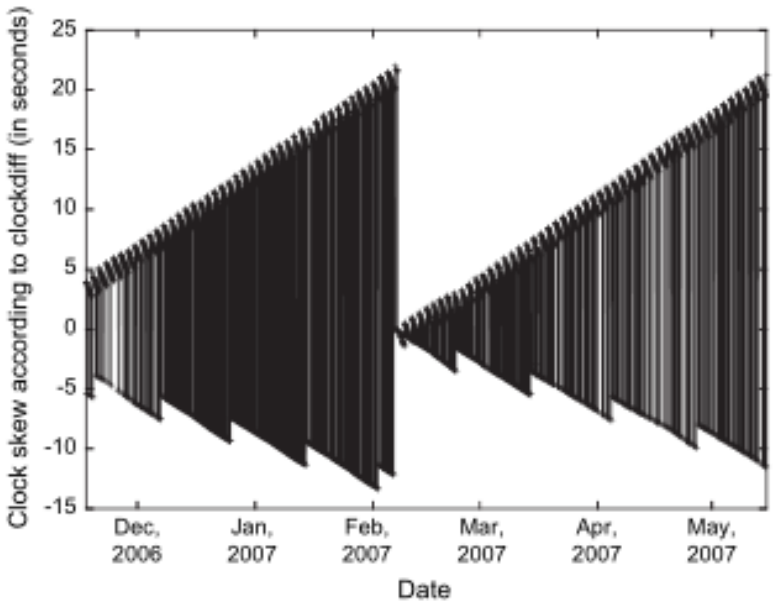
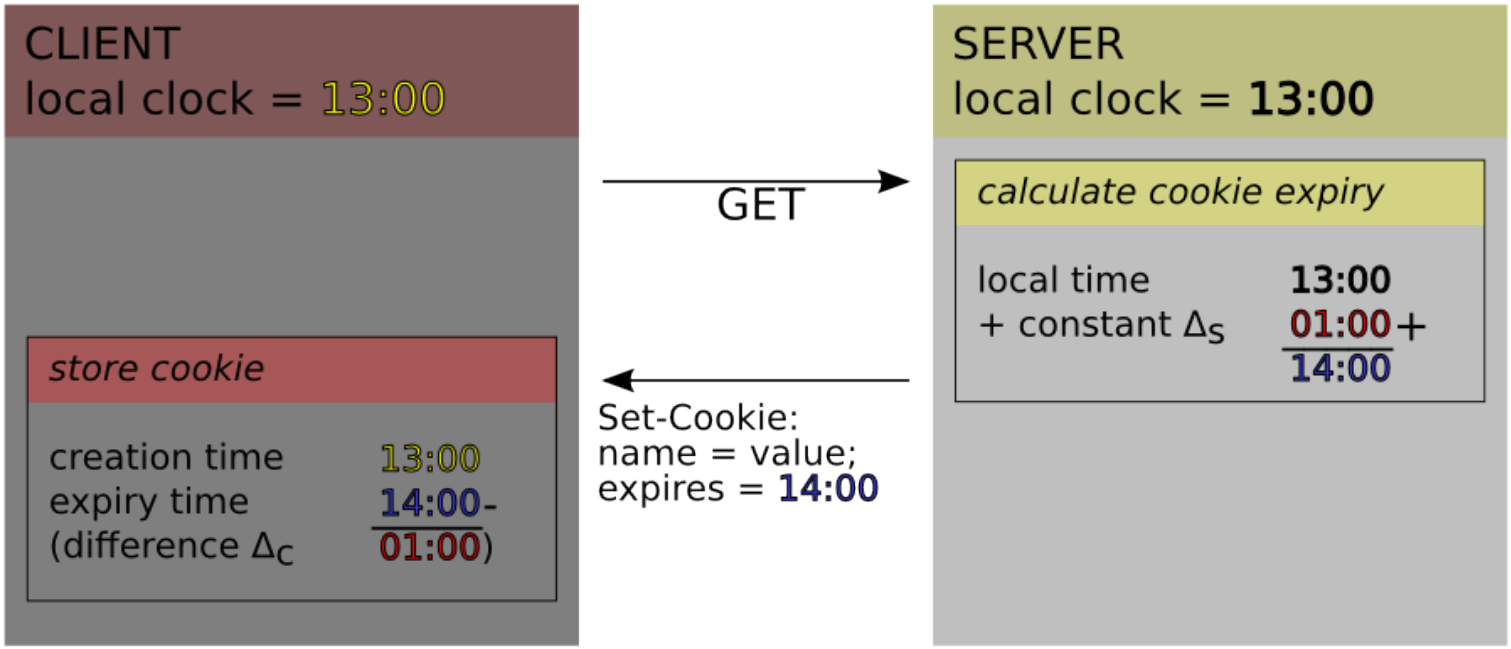


Fig. 19 – Two different hosts "sharing" an IP address?

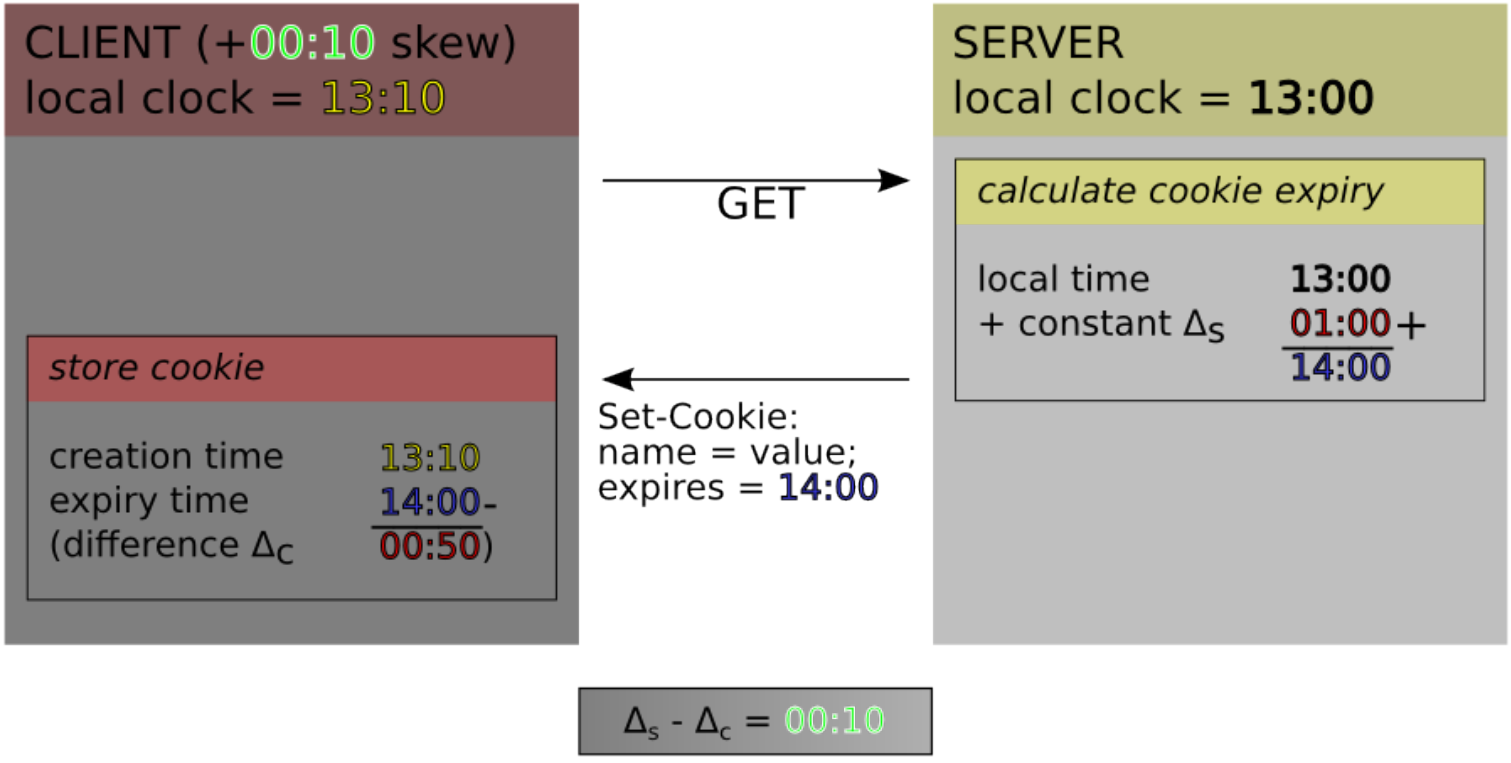
Server time ends up on your machine

Clocks in sync



Server time ends up on your machine

Client-side skew



Acquiring server deltas

```
HTTP/1.0 200 OK
Server: nginx/1.2.0
Date: Fri, 21 Sep 2012 05:51:57 GMT
Content-Type: text/html;charset=UTF-8
Transfer-Encoding: chunked
Connection: keep-alive
Set-Cookie:
   anonymid=h7cvgx1h6is4h3;
   domain=.renren.com;
   path=/;
   expires=Wed,20-Sep-2017 05:51:57 GMT
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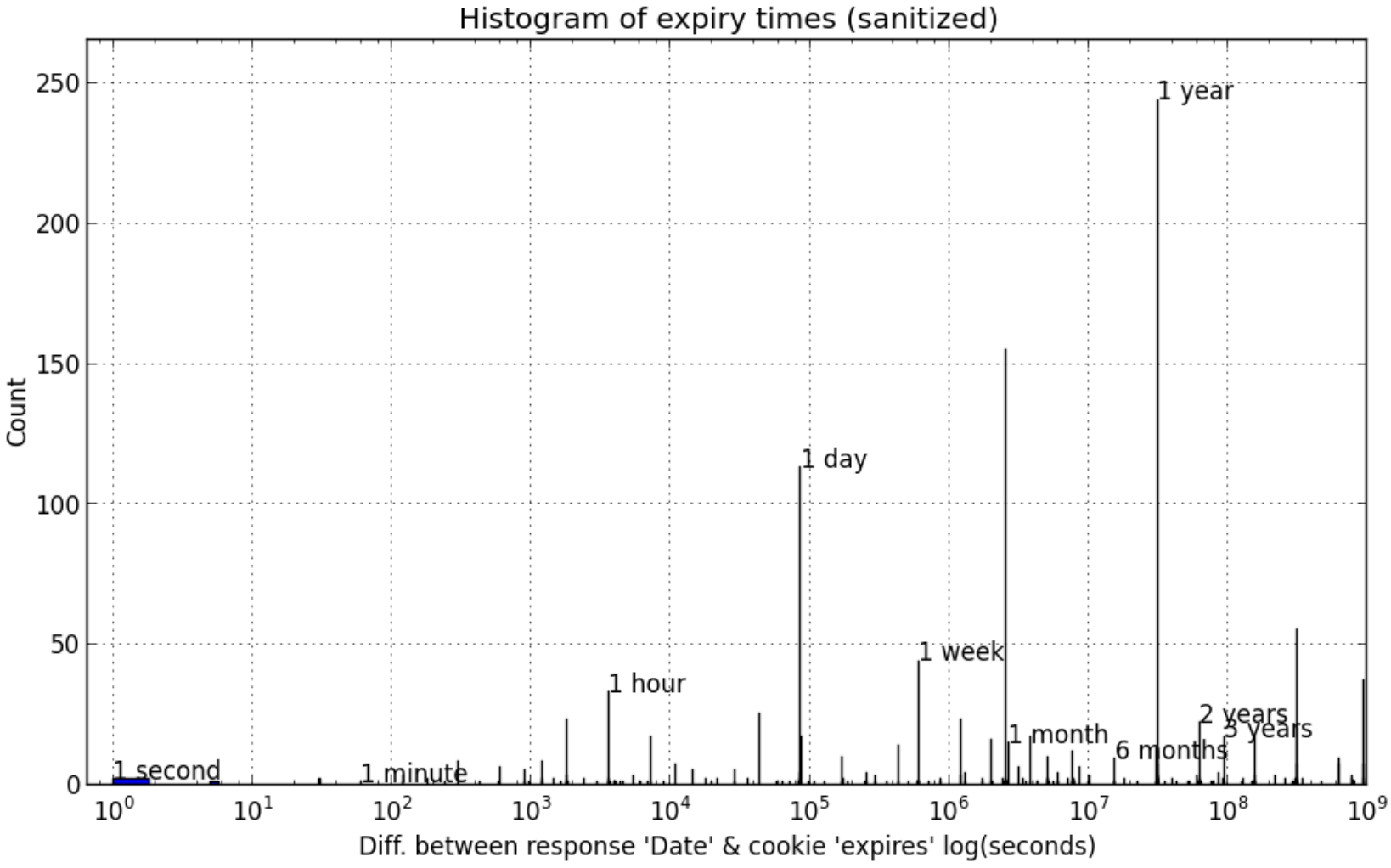
→ *Shodan Research HTTP Header Survey*

Acquiring server deltas



Demo time